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# Industrial Horizons



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## STRATOLIFT LATEST PRODUCT OF HAMILTON FIRM

A product few would say can be made in Montana—800 miles from mass markets—is being made on a limited scale right in Hamilton for national distribution.

Hydro-Point Engineering Company, a small metals fabricator started ten years ago, makes "Stratolift," a platform attached to a truck body which can be raised to a height of up to 70 feet. Potential uses of this product are numerous: pruning trees, stringing and repairing wire, fixing towers and chimneys, painting, and many others. A patent has been applied for. About ten of the machines have been manufactured, and Hydro-Point is ready to go into full production.

Started to manufacture an incising machine for treating of poles in 1947, the firm has gradually evolved into a fabricator of many metal products, as for instance hydraulically-operated farm gates, roof-boring machines, and jacks to lift heavy reels off the ground. Main business of the firm is fabrication of plates for various uses. Although most of its contracts are with western Montana mining and forest product companies, Hydro-Point's products are marketed as far away as Kansas.



Conrad LaSalle and M. H. Annin, owners of the company, are both Montanans and 1947 graduates of Montana State College. Hydro-Point also does consulting in design of machinery and buildings.

Thus, with a specialized product, Montana manufacturers may serve a wide market.

## BOZEMAN PLANNING ASSISTANCE GRANT APPROVED

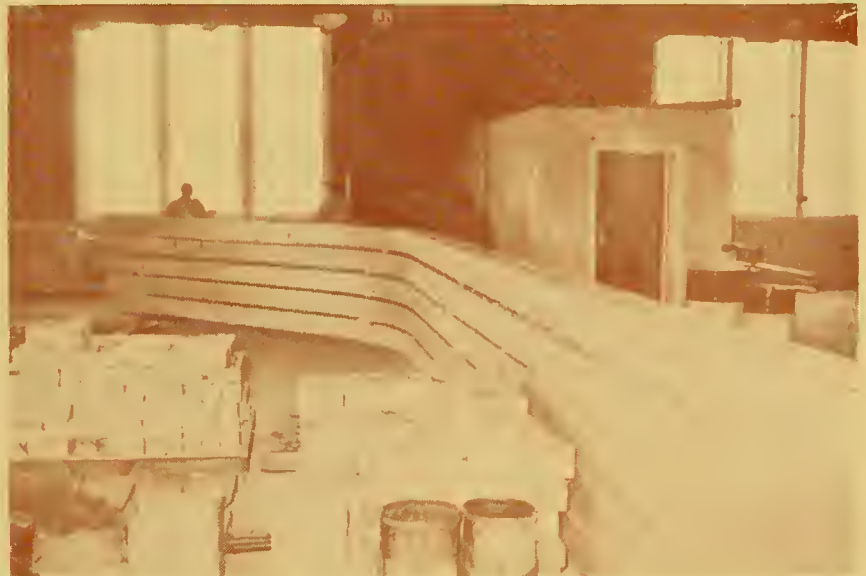
Word was received from Housing and Home Finance Agency by State Planning Board June 25 that Bozeman's Urban Planning Assistance grant has been approved. Under the grant, HHFA will pay \$7,350 of the total cost of a master plan for Bozeman. City of Bozeman will match this amount with equal funds—\$4,350 in cash and \$3,000 in services by city employees.

Proposed activities to be included in the planning program include study and analysis of population, land use, commercial and transportation facilities, school and recreational facilities, streets and highways, sanitation, housing and tax delinquency, flood protection, and zoning ordinances and subdivision regulations; and preparation of a long-range capital improvements plan. All these studies are aimed at providing a basis for guiding the growth and development of Bozeman, and at preventing slum and blight conditions.

This project is the first in Montana, but several other communities are contemplating applying for a similar grant. In all, 362 communities in 22 states are now participating in the program.

Under a ruling of HHFA, State Planning Board administers the program in Montana for communities under 25,000 population. Bozeman's master plan is to be prepared, under contract with State Planning Board, by a professional city planning consulting firm, S. R. DeBoer and Company of Denver.

Credit for initiation of the planning program goes to Bozeman's City Commission, City Manager M. E. Henderson, and the Municipal Planning Board.



Timberweld Manufacturing Company, which makes laminated wood beams in Columbus, has been in business only four months, but already has sufficient orders to contemplate expansion of the physical plant. Capitalization has been increased to \$200,000, which enables the new company to add new machinery and to make production more efficient.

The four young Montanans who started the company—Thelmar Mosdal, President; Ralph Heiken, Production Manager; K. L. Davenport, Sales Manager; and R. B. Wolfe, General Manager—justifiably feel they are in on the ground floor of a growth industry.

Nationally, manufacturers of laminated beams plan to use nearly 200 million board feet of lumber this year. They claim these wood beams are stronger and more fire resistant than steel beams. Certainly more and more contractors are beginning to use them.

Another reason they are becoming increasingly popular is their beauty—naturally finished, polished beams do not require wall covering. Dollar value of the finished product is high as compared with raw material entering the plant, and profit returns tend to be high.

Laminated-glued beam sars usually made of planks  $\frac{3}{4}$ " to 2" thick, and up to 11" wide. They are glued together under pressure with a strong casein emulsion or synthetic resin. Pictured above is a group of Timberweld beams ready for shipment.



# Tungsten, Iron in Beaverhead County

## Infant Tungsten Industry Grows With Experience

Minerals Engineering Company, which began tungsten mining and milling operations in Beaverhead County in 1953, provides a good illustration of how initially marginal mining activities can become important and stable operations.

The company began open pit operations at the Brown's Lake and Lost Creek deposits 14 miles northwest of Glen with scheelite (tungsten) ores as low in grade as 0.3 per cent. This was on the basis of a guaranteed price from General Services Administration under the federal government's defense stockpiling program. Although this program since has been suspended, Minerals Engineering was able to shift to sales on the open market. It is mining, however, only higher-grade ores (one per cent tungsten trioxide) from another deposit, the Calvert mine 7 miles west of Wise River, Montana.

### 2 Forms of Concentrate

Ore is transported by truck 47 miles from Wise River to the company's mill near Glen. There, two forms of concentrate are produced. One is a high-grade product containing 60 per cent  $WO_3$ . This is packaged at Glen and sent to the company's acid-leaching plant at Salt Lake City for removal of lime, copper, sulfur, phosphorus, lead and iron. In this process, the ore is upgraded to a leached product of 70 per cent  $WO_3$ , or better. Under marketing arrangements recently negotiated, the entire output is sold in New York and Pennsylvania.

The other concentrate is low-grade and constitutes 45 per cent of Minerals Engineering's present production. Ore is milled at Glen and upgraded to a 10-12 per cent  $WO_3$  concentrate, and then shipped to Salt Lake City. There, the tungsten is dissolved out with pressure digesters, purified, and reprecipitated as artificial scheelite or calcium tungstate. This is calcined and nodulized to form a product similar to natural scheelite with a content of 70 per cent plus  $WO_3$  without impurities.

Minerals Engineering has mining activities in many sections of America, and ranks as the nation's third largest tungsten producer. Headquarters is Grand Junction, Colorado, and President is Blair Burwell. Vice President and General Manager, out of Grand Junction, is R. G. Sullivan, and Earl Craig, who lives in Dillon, is Manager of the Montana division.

### Operation Has Large Economic Impact

Minerals Engineering Company's tungsten activity is important to Beaverhead County and to Montana. Employment, which was over 100 under the government purchase program and is now 65, is year-round. All employees live in the nearby communities of Glen, Melrose, Dillon and Twin Bridges. Annual payroll approximates \$800,000, including wages paid to trucking firms. In addition, over \$2 million is expended annually by the company in Montana for supplies, services, raw materials, and transportation.

Particularly significant is the fact that had there been no government tungsten purchase program in 1952, it is highly unlikely that present production levels could be maintained. Government purchase made production possible from the low-grade Brown's Lake-Lost Creek deposits. While mining these areas, Minerals Engineering was able to conduct exploration programs which disclosed the higher-grade ore bodies now being worked near Wise River. In addition, the company was able to make many technological advances which enabled it to continue operations after the incentive program was cut off.

If the government buying program is resumed, management of Minerals Engineering indicates the company rapidly could return to mining the low-grade ores. According to Craig, economic benefits to Montana in terms of employment and expenditures for goods and services would be substantially above present levels. Furthermore, additional technological progress and new discoveries would likely result, all of which would add further stability to one of Montana's newest mineral industries.

## HUGE IRON DEPOSIT FOUND NEAR DILLON

Another direct result of Minerals Engineering's tungsten operations has been an intensive exploration program for iron ore in the Dillon area.

This program has been underway for some time and proven reserves of 200 million tons of magnetite ore containing 30 per cent Fe or better have been discovered. (Continued on Next Column)



View of Minerals Engineering tungsten mill near Glen, Montana, looking downhill. Series of dam-like objects are tailings dumps, which make a very efficient gravity-flow waste disposal for the mill.

closed on the Carter Creek deposits east of Dillon. The ore is free of many of the impurities commonly found in iron ores. In addition, all mining would be open pit, and the deposit lies in a manner that would contribute to extremely efficient and economic mining.

Minerals Engineering has investigated thoroughly the processing and marketing of this iron to determine whether production is feasible. A principal consideration at the present time is establishment of milling facilities to upgrade the ore to 65 per cent concentrate or better. The concentrate would be calcined and sintered hard to nodules between one and 1.5 inches diameter, and probably shipped to Western steel mills.

According to Craig, total investment would be in the neighborhood of \$6 million should an economic cost-price relationship be obtained. Marketing possibilities appear very good. Ultimate production could be around 500,000 tons per year, and this would require employment of approximately 125 men.



All tungsten operations of Minerals Engineering are open pit. Prospective mining of iron ore near Dillon would also utilize power shovels.

### KNOW OF ANY LIME DEPOSITS?

State Planning Board has had an inquiry from a responsible industrialist requesting information about a limestone deposit for lime manufacture. Chemical requirements are as follows: minimum 97 per cent calcium carbonate; maximum 1.6 per cent magnesium oxide, 1.1 per cent silica, 0.5 per cent calcium oxide and 0.009 per cent phosphorus. Deposits must be large—on the order of 1,000,000 tons.

Limestone abounds in Montana. According to Montana Bureau of Mines and Geology, reserves of good limestone are limitless. Therefore, a large factor in the price of lime is transportation. Workable deposits should be within a mile or two of a railroad to minimize trucking costs.

Preparation of lime is one of the state's oldest industries. Kilns were built all through western Montana to serve mining operations in the 1870's and 1880's. Other Montana industries using lime and limestone include sugar refining, smelting, and wood pulping.

Anyone knowing of a limestone deposit meeting the above requirements is urged to contact the State Planning Board.

## PLANNING BOARD HEARS FOREST OFFICIALS, SUNBURST MAYOR

Members of State Planning Board and its Advisory Council met together this month to discuss both long-range and short-term aspects of the Board's industrial development program.

June 5, officials of the regional office of U. S. Forest Service at Missoula reported on the progress of inventories of national forest timber. By the end of fiscal 1958 nearly 80 per cent of Montana's national forest land will be classified and appraised. With the knowledge of what our forests contain, forest officials will be able to prepare timber sales in a more complete and efficient manner. These timber sales are basic to Montana's forest industry.

The officials, which included Charles Tebbe, Regional Forester; Axel Lindh, Assistant Regional Forester in charge of timber management; and John Castles, in charge of management plans, also told of the importance of these inventories to Montana's pulp industry. Much of Montana's timber is suitable only for pulp. As the market for pulpwood grows, new timber sales will be prepared.

### Increase in Allowable Cut

Another significant point discussed by the Forest officials was the change in the past few years in what is considered "commercial" timber. Formerly, nothing was usable if its trunk was smaller than 14" diameter and its top less than 10". Now, increased use of pulpwood, better recovery procedures, and use of species formerly considered unusable have increased the estimate of allowable saw-timber cut in Montana from 293 million board feet a few years ago to 790 million this year. Much of this increase can also be attributed to the new inventories. Of the increase, according to Castles, three-fourths is from trees of 5" to 11" diameter, formerly not economic. Any lodgepole of 5.5" top is now commercial. Thus, with changing technologies and good management, the state's timber resources can be expected to increase in quantity.

Some indication of the magnitude of the state's forest products industry can be gleaned from the fact that 385 million board feet of timber was cut from Montana's national forests in 1955, and 508 million in 1956, a 32 per cent increase. Timber sales in 1957 will amount to 760 million board feet (including long-term contracts).

### Big Hole Now Unused

Timber potential in Big Hole Valley was discussed. The valley has 647,000 acres of commercial timber, a "wood-pile" the same size as the famous and productive Coeur d'Alene area of Idaho. One reason the Big Hole has not been utilized heretofore by the lumber industry, commented the Forest officials, is lack of cheap transportation from the valley.

Importance of spruce budworm spraying program to reduce timber losses was emphasized. Since nearly half the state's timber still needing this spraying is privately owned, Forest officials need the cooperation of both large and small timber owners.

All in all, the Forest officials gave a very informative presentation.

### Sunburst Refinery to Close

June 6, the Board heard Mayor Roland White of Sunburst tell the problems his community will face when the town's leading employer, Texas Company oil refinery, closes in 1959. Not only will there be dislocation due to removal of most of the 106 employees to a new refinery at Anacortes, Washington, but the city's water is supplied by the Texas Company.

Possibilities include: purchase of the refinery by another oil or chemical company, purchase of the water system by the City of Sunburst, and creation of new manufacturing employment to supplement the decline caused by the shut-down.

The Board suggested that Mayor White call a community meeting with Texas officials to explore solutions to the problems, and that Sunburst form an industrial development group to actively search for small industries. Cooperation of the Board in all these efforts was guaranteed, but it was emphasized that local effort is paramount.

In other business, the Board and Advisory Council talked over long-range programs to aid community development efforts in the state. Discussed were urban renewal, a land utilization study to be conducted this summer in a cooperative venture with Bureau of Business and Economic Research of Montana State University, and a new directory of Montana manufacturers which is to be compiled this summer in a joint effort between the Planning Board and the Endowment and Research Foundation at Montana State College.

### Board and Council Members

Members of the Planning Board include D. P. Fabrick, Choteau rancher, Chairman; C. H. Raymond, Hamilton; H. J. Sawtell, owner, Yellowstone Lumber, Miles City; Fred Buck, State Engineer; and Governor J. Hugo Aronson. Advisory Council consists of R. C. Setterstrom, Montana Power Industrial Development Engineer, Butte, Chairman; Dr. R. R. Renne, President of Montana State College, Bozeman; W. J. Bowman, Manager of the Billings Builders Exchange, Billings; A. J. Mosby, President of Montana Radio Stations, Inc., Missoula; James S. Ueber, President of State AFL-CIO, and James J. Flaherty, President of Great Falls Paper Company.

The Board and Advisory Council meet together at irregular intervals—averaging three or four times a year. Members of the Board are appointed by the Governor for six-year terms, and are also ex-officio members of the State Water Conservation Board. Advisory Council is appointed by the Board for liaison purposes with the people of Montana. Its members are "the eyes and ears" of the Board.



# MONTANA'S POTENTIAL FOR MARKET-ORIENTED INDUSTRIES

**INDUSTRIAL HORIZONS** in the past few issues has been emphasizing Montana's potential for small, locally-developed manufacturing operations, particularly those tied to growing markets in the state and the Northwest.

The March issue had an article entitled "Industry to be Found in Your Own Back Yard," which mentioned that 85 per cent of all manufacturing activity in America is located where it is because that is where it started. The April issue gave "case histories" of five small Montana manufacturers, of which two utilize Montana natural resources to serve Montana markets, two make patented specialized products for national distribution, and one processes our natural resources for out-of-state markets. The May issue featured one growing Montana industry—manufacture of small pleasure boats.

In this issue we reprint part of the chapter on "Markets" from the Montana issue of *Commerce and Industry* magazine, which was published early this year. This section, written by Dr. H. K. Shearer, Associate Director of the Bureau of Business and Economic Research at Montana State University, briefly discusses types of market-oriented industries which might economically be located in Montana.

The importance of markets in any discussion of industrial growth in Montana can hardly be over-emphasized. This state for generations has been a net importer of manufactured products. Here then is a market for certain types of goods, which might well be produced within the state by market-oriented industries. These industries, generally involved in the final stages of production, have a common characteristic: total freight charges per unit of distance for the finished product are greater than total freight charges per unit of distance for the raw material; this results in these industries attempting to locate close to the market in order to minimize transportation costs. Following is a list of relationships, which, individually or in combination, are often responsible for the location of an industry close to its market:

1. The finished product has greater weight than the raw material.
2. The finished product has greater volume than the raw material.
3. The finished product has greater perishability than the raw material.
4. The finished product has greater fragility than the raw material.
5. The finished product is more dangerous to handle (e.g. explosive,

corrosive, or contaminating) than the raw material.

6. The finished product consists of goods moving in many small lots while the raw material is a bulk commodity moving in large lots.
7. The finished product is one designed to meet customers' specifications, requiring prompt delivery on short notice, and subject to change.
8. The raw material is sold on a uniform delivered price basis, with freight charges absorbed by the seller.

It should not be inferred from the above discussion that only industries in which the market influence is dominant might economically be located in the state. Other types—at primary or intermediate stages—for which there may be economic advantage include the following: those using local bulky or perishable raw materials; those in which the cost of power is a large percentage of the total cost of production; those in which certain types of skilled labor are required; those for which transit privileges are, or might be made, available for locations within the state; those for which both raw material source and market are local; and those producing by-products which can be used as raw materials for other local manufacturing industry.

All this, of course, is not to say that any industry with one or a combination of the characteristics mentioned will find an economic location in Montana. In the last analysis the location is determined by the resultant of many forces, including considerations of comparative advantage and scale. On the other hand, any manufacturer whose products meet these descriptions might well consider Montana sites in locating his plant.

## Committee Formed for Rural Development

According to figures developed by John Bower, Economist with the Montana Extension Service at Montana State College, 29 per cent of the farms in 1954 in Montana were "low production" farms—farms with annual sale of farm products less than \$2500, and residential and part-time farms which produce farm products for sale.

But 79 per cent of the farms in Lincoln County were in this category, and 75 per cent in Mineral County. In the seven western Montana counties of Lincoln, Sanders, Missoula, Mineral, Flathead, Lake and Ravalli, 60 per cent of all farms were "low production" farms. This is to be contrasted with Hill County, where only 5 per cent of the farms were in this category.

What this means is that much of the farming in western Montana is not productive. Farmers are forced to work part-time in nearby cities to make a decent living. There are, in some counties, too many farms, and too many people operating them. Many of our mountain valleys are pleasant places to live, but the number of agriculturists they can support is limited. There is a limit to the amount of specialized garden and orchard products that can be sold in Montana cities, and the growing season is too short to go into that kind of farming extensively in competition with areas of warmer climates.

### Declining Rural Population

Bower has made further calculations about farming opportunities in Montana. Each year around 1,200 farm boys come of age. However, only 800 farms become available each year. This means that one-third of all Montana farm boys must find other employment. Montana's rural-farm population declined by 22.6 per cent between 1940 and 1950.

This is where all Montana citizens must be concerned. If we want to keep this most valuable resource in Montana—our productive youth—we must provide economic opportunity, or these young people will be forced to move elsewhere in order to find jobs.

These figures are even more significant when it is realized that the number of farms and ranches in Montana declined by 2,000 in just four years—from 35,000 to 33,000 between 1950 and 1954. This means even more farm youth which must find urban employment.

### Rural Development Committee

A meeting was held in Bozeman on April 26 to talk over these matters, and to set up an informal organization to coordinate efforts of governmental agencies on all levels to bolster economic opportunities for Montana's rural citizens.

Elected to the steering committee were representatives of Montana Extension Service Soil Conservation Service, State Planning Board, State Forester's Office, Montana State College, and State AFL-CIO. Elected chairman was Dean M. M. Kelso, School of Agriculture at Montana State College. Other agencies on the state committee include nearly all federal and state groups concerned with agricultural development.

## MONTANA STATE PLANNING BOARD

Sam Mitchell Building

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